

advantage is that said 3D representation is easily obtained from said object borders and some a priori knowledge of this object. A 3D representation of a tubular object of interest like a stent or a stenosis may for instance be derived from the knowledge of its border location in two views and the assumption of a cylindrical shape with a variable elliptical section.

5

### Brief description of the drawings

The invention will be further described with reference to the accompanying drawings:

- Figs 1a, 1b, 2a and 2b illustrate two steps of angioplasty: during balloon inflation and during stent deployment at the location of a stenosis,
- 10 - Fig. 3 is a functional block diagram of the detection means according to the invention,
- Fig. 4a is a functional block diagram of the localizer detection sub-means according to the invention,
- Fig. 4b shows a circular filter for extracting balloon markers according to the invention,
- 15 - Fig. 5 is a functional block diagram of the marker extraction sub-means according to the invention,
- Fig. 6a shows an original angiogram, Fig. 6b shows two zones of detected markers and Fig 6c shows an enhanced object of interest on a filtered background,
- Fig. 7a and 7b illustrate possible initializations of an active contour according to the invention,
- 20 - Fig. 8a and Fig. 8b show how an active contour is inflated to match the borders of an object of interest,
- Fig. 9 shows three possible applications of detecting the borders of an object of interest: an object enhancement, a measurement of characteristics of the object of interest and a 3D representation of the object of interest,
- 25 - Fig. 10 shows a simple 3D model for building a 3D representation of a tubular object of int like a stent or an artery,
- Fig. 11 describes the local registering means for combining a sequence of reference images a sequence of enhanced images produced by the enhancement means according to the inver
- 30 - Fig. 12 is a functional block diagram of a medical examination apparatus using the system invention.

### Detailed description of the invention